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Amendment and Response Serial No.: 09/772,598 Confirmation No.: 2967 Filed: January 30, 2001

For: CRYSTALLIZATION AND STRUCTURE DETERMINATION OF STAPHYLOCOCCUS AUREUS NAD

SYNTHETASE

Amendments to the Claims

This listing of claims replaces all prior versions, and listings, of claims in the above-identified application:

1-34. (Canceled)

35. (Previously Presented) A method for crystallizing Staphylococcus aureus nicotinamide adenine dinucleotide (S. aureus NAD) synthetase comprising:

providing purified S. aureus NAD synthetase at a concentration of about 1 mg/ml to about 50 mg/ml; and

crystallizing S. aureus NAD synthetase from a solution comprising about 5% by weight to about 50% by weight polyethylene glycol (PEG) and about 0% by weight to about 20% by weight dimethyl sulfoxide (DMSO).

36-37. (Canceled)

- 38. (Previously Presented) A crystal of Staphylococcus aureus nicotinamide adenine dinucleotide (S. aureus NAD) synthetase.
- 39. (Currently Amended) A crystal of Staphylococcus aureus nicotinamide adenine dinucleotide (S. aureus NAD) synthetase having the monoclinic trigonal space group symmetry P2₁.
- 40. (Previously Presented) A crystal of Staphylococcus aureus nicotinamide adenine dinucleotide (S. aureus NAD) synthetase comprising a unit cell having dimensions of a, b, and c; wherein a is about 40Å to about 60Å, b is about 90Å to about 120Å, and c is about 80Å to about 110Å; and wherein $\alpha = \gamma = 90^{\circ}$ and β is about 80° to about 120°.

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41. (Previously Presented) A crystal of Staphylococcus aureus nicotinamide adenine dinucleotide (S. aureus NAD) synthetase comprising atoms arranged in a spatial relationship represented by the structure coordinates listed in Table 1.

- 42. (Previously Presented) A crystal of Staphylococcus aureus nicotinamide adenine dinucleotide (S. aureus NAD) synthetase having amino acid sequence SEQ ID NO:1.
- 43. (Previously Presented) A crystal of Staphylococcus aureus nicotinamide adenine dinucleotide (S. aureus NAD) synthetase having amino acid sequence SEQ ID NO:1, with the proviso that at least one methionine is replaced with selenomethionine.
- 44. (New) A method for crystallizing *Staphylococcus aureus* nicotinamide adenine dinucleotide (S. aureus NAD) synthetase comprising:

providing purified S. aureus NAD synthetase at a concentration of about 1 mg/ml to about 50 mg/ml; and

forming a crystal of S. aureus NAD synthetase from a solution comprising about 5% by weight to about 50% by weight polyethylene glycol (PEG) and about 0% by weight to about 20% by weight dimethyl sulfoxide (DMSO),

wherein the crystal has the monoclinic space group symmetry P2₁.

- 45. (New) The method of claim 44 wherein the solution comprises 18% by weight to 22% by weight PEG 1500.
- 46. (New) A method for crystallizing Staphylococcus aureus nicotinamide adenine dinucleotide (S. aureus NAD) synthetase comprising:

providing purified S. aureus NAD synthetase at a concentration of about 1 mg/ml to about 50 mg/ml; and

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forming a crystal of S. aureus NAD synthetase from a solution comprising about 5% by weight to about 50% by weight polyethylene glycol (PEG) and about 0% by weight to about 20% by weight dimethyl sulfoxide (DMSO),

wherein the crystal comprises a unit cell having dimensions of a, b, and c; wherein a is about 40Å to about 60Å, b is about 90Å to about 120Å, and c is about 80Å to about 110Å; and wherein $\alpha = \gamma = 90^{\circ}$ and β is about 80° to about 120°.

- 47. (New) The method of claim 46 wherein the solution comprises 18% by weight to 22% by weight PEG 1500.
- 48. (New) A method for crystallizing Staphylococcus aureus nicotinamide adenine dinucleotide (S. aureus NAD) synthetase comprising:

providing purified S. aureus NAD synthetase at a concentration of about 1 mg/ml to about 50 mg/ml; and

forming a crystal of *S. aureus* NAD synthetase from a solution comprising about 5% by weight to about 50% by weight polyethylene glycol (PEG) and about 0% by weight to about 20% by weight dimethyl sulfoxide (DMSO),

wherein the crystal comprises atoms arranged in a spatial relationship represented by the structure coordinates listed in Table 1.

- 49. (New) The method of claim 48 wherein the solution comprises 18% by weight to 22% by weight PEG 1500.
- 50. (New) A method for crystallizing *Staphylococcus aureus* nicotinamide adenine dinucleotide (S. aureus NAD) synthetase comprising:

providing purified S. aureus NAD synthetase at a concentration of about 1 mg/ml to about 50 mg/ml; and

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forming a crystal of S. aureus NAD synthetase from a solution comprising about 5% by weight to about 50% by weight polyethylene glycol (PEG) and about 0% by weight to about 20% by weight dimethyl sulfoxide (DMSO),

wherein the crystal of S. aureus NAD synthetase has an S. aureus NAD synthetase amino acid sequence SEQ ID NO:1.

- 51. (New) The method of claim 50 wherein the solution comprises 18% by weight to 22% by weight PEG 1500.
- 52. (New) A method for crystallizing Staphylococcus aureus nicotinamide adenine dinucleotide (S. aureus NAD) synthetase comprising:

providing purified S. aureus NAD synthetase at a concentration of about 1 mg/ml to about 50 mg/ml; and

forming a crystal of *S. aureus* NAD synthetase from a solution comprising about 5% by weight to about 50% by weight polyethylene glycol (PEG) and about 0% by weight to about 20% by weight dimethyl sulfoxide (DMSO),

wherein the crystal of *S. aureus* NAD synthetase has an *S. aureus* NAD synthetase amino acid sequence SEQ ID NO:1, except that at least one methionine is replaced with selenomethionine.

- 53. (New) The method of claim 52 wherein the solution comprises 18% by weight to 22% by weight PEG 1500.
- 54. (New) A crystal of Staphylococcus aureus nicotinamide adenine dinucleotide (S. aureus NAD) synthetase, wherein the crystal effectively diffracts x-rays to a resolution of 1.5Å to 3Å.
- 55. (New) The crystal of claim 54 wherein the resolution is at least 2.2Å.

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56. (New) A method for crystallizing *Staphylococcus aureus* nicotinamide adenine dinucleotide (S. aureus NAD) synthetase comprising:

providing purified S. aureus NAD synthetase at a concentration of about 1 mg/ml to about 50 mg/ml; and

forming a crystal of S. aureus NAD synthetase from a solution comprising about 5% by weight to about 50% by weight polyethylene glycol (PEG) and about 0% by weight to about 20% by weight dimethyl sulfoxide (DMSO),

wherein the crystal effectively diffracts x-rays to a resolution of 1.5Å to 3Å.

- 57. (New) The method of claim 56 wherein the resolution is at least 2.2Å.
- 58. (New) A crystal of *Staphylococcus aureus* nicotinamide adenine dinucleotide (*S. aureus* NAD) synthetase, wherein the crystal has at least one dimension of 0.15-0.8 mm.
- 59. (New) The crystal of claim 58 having dimensions of 0.15-0.8 mm x 0.2 mm x 0.05-0.1 mm.
- 60. (New) The crystal of claim 58 wherein the crystal effectively diffracts x-rays to a resolution of 1.5Å to 3Å.
- 61. (New) The crystal of claim 60 wherein the resolution is at least 2.2Å.
- 62. (New) A method for crystallizing Staphylococcus aureus nicotinamide adenine dinucleotide (S. aureus NAD) synthetase comprising:

providing purified S. aureus NAD synthetase at a concentration of about 1 mg/ml to about 50 mg/ml; and

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forming a crystal of *S. aureus* NAD synthetase from a solution comprising about 5% by weight to about 50% by weight polyethylene glycol (PEG) and about 0% by weight to about 20% by weight dimethyl sulfoxide (DMSO),

wherein the crystal has at least one dimension of 0.15-0.8 mm.

- 63. (New) The method of claim 62 wherein the crystal has dimensions of $0.15-0.8 \text{ mm} \times 0.2 \text{ mm} \times 0.05-0.1 \text{ mm}$.
- 64. (New) The method of claim 62 wherein the crystal effectively diffracts x-rays to a resolution of 1.5Å to 3Å.
- 65. (New) The method of claim 64 wherein the resolution is at least 2.2Å.
- 66. (New) The method of claim 35 wherein the solution comprises 18% by weight to 22% by weight PEG 1500.